The Coal Situation

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$99 BILLION FOR COAL

The nineteen eighties will be a period of energy transition as world economies turn increasingly to coal as a primary energy source.

Led by an accelerating growth in usage by the electric utility and industrial sectors and the start of synthetic fuels from coal in the latter half of the decade, annual world coal consumption is expected to reach 6.2 billion tons by 1990, an increase of 2.4 billion tons over actual 1978 levels. The non-Communist areas of the world are expected to exhibit the highest rate of growth, with their share of total consumption increasing from 43 percent in 1978 to 45 percent by 1990. This growth in non-Communist coal requirements will be met essentially through the expansion of the coal industries of the nations comprising this segment of the world's economies. The following is an analysis of production patterns and associated capital required to support the expansion of the non-Communist coal industry.

PATTERNS OF PRODUCTION

In 1978, coal production in the non-Communist world was almost 1.6 billion tons and by 1990 production is forecasted to reach 2.7 billion tons. The detailed regional breakdown of these production levels is shown in Table 1. Also shown are the shares of production by sector: private enterprise, government-related, and developing countries. The private enterprise sector comprises the countries where coal production is in the hands of investor-owned companies, and includes the United States, South Africa, Australia, Japan, and Canada*. The government-related sector includes the government-owned or controlled industries of Europe and India while the developing country segment represents those nations of Africa, Asia, and Latin America that presently lack any significant coal industry.

As shown in Table 1, the United States is expected to maintain its position as the largest single producer in the non-Communist world, producing 49.2 percent of the total or 1.3 billion tons in 1990. The U.S. normally accounts for about 50% of worldwide production. In recent history, the prolonged strike in 1978 made that year the only exception.

TABLE 1
SHARE OF NON-COMMUNIST WORLD COAL PRODUCTION
(Percent)

	1978	1990
By Region		
United States	42.0	49.2
Canada	2.1	2.3
Latin America	0.9	1.7
Europe	30.5	21.0
Africa	6.7	8.4
Asia	10.1	9.2
Australia/New Zealand	7.7	8.2
Total	100.0	100.0
By Sector		
Private Enterprise	59.5	68.3
Government-Related	37.6	27.7
Developing Countries	2.9	4.0
Total	100.0	100.0

The most significant regional change during the decade is the relative decline of European production and the relative increase in Africa, Australia, and Latin America. The decline in the European share of total output can be traced to resource depletion and the high cost of mining. European expansion difficulties also produce a decline in the relative importance of the government-related coal industry, although, in absolute terms, production from this sector will continue to grow at 2% per year. Thus, the member nations of the government-controlled category will become increasingly dependent upon coal imports.

Through the decade, coal output in the non-Communist world will be dominated increasingly by the private enterprise sector. With the exception of Japan, each country having a private enterprise coal industry is expected to increase its share of output over 1978. Japan's decline in relative importance reflects resource depletion that will limit output to current levels.

*Included in the Canadian data is a segment of coal production by the government-owned industry in Nova Scotia.

Developing countries are also expected to increase their share, with 1990 production representing 4% of the total versus less than 3% in 1978. The key countries involved in this expansion are Colombia, Brazil, and Indonesia.

To support a 1990 production level of 2.7 billion tons, the non-Communist coal industry will require significant new production capacity, not only to meet the increased demand but also to replace existing facilities as present reserves are depleted. Assuming an average life of 25 years for underground mines and 19 years for surface mines, existing capacity will decline at 4.2 percent a year with the result that by 1990 over half of the capacity that existed in 1978 will have to be replaced. This will need to be supplemented by an additional billion tons of capacity to meet the higher 1990 production needs. Thus, by 1990, the non-Communist world coal industry will need to make investments to support almost two billion tons of new capacity, or as much as the total capacity that existed in 1978.

INVESTMENT NEEDS

Investment requirements for new mine operations are site specific and vary substantially, depending on the type and scope of mining operations, mining conditions, and existing infrastructure. For instance, capital requirements associated with the mine complex itself range from $35-$65 (1980 U.S. dollars) per ton of annual capacity installed for underground mines and $18-$70 (1980 U.S. dollars) per ton of annual capacity for surface mines. Infrastructure requirements, such as transportation, new town development, and shipping capabilities vary widely and can add another $10-$105 per ton (1980 U.S. dollars).

In forecasting the non-Communist investment needs in coal, the required expenditures for typical underground and surface operations were estimated for each region, based on the above ranges of capital needed for building both mines and infrastructure. Average capital requirements were then determined, based on future expectations for the split between surface and underground mines for each area.

This regional analysis leads to a cumulative investment need of about $99 billion (1980 U.S. dollars) in the eleven years starting in 1980 and running through 1990. The regional and sectorial breakdown of investment needs for the years 1980, 1985 and 1990 are shown in Table 2.

Regionally, at $38.7 billion, the United States coal industry leads the non-Communist world in cumulative investment requirements, followed by Europe at $25.5 billion and Australia at $13.1 billion. Sectorially, the private enterprise sector exhibits capital needs almost double the cumulative requirements of the government-related sector. Over the decade, coal industry expansion in the developing nations shows the highest rate of growth in investment requirements.

TABLE 2

CAPITAL INVESTMENT – 1980 THROUGH 1990

(Billion 1980 U.S. Dollars)

	1980	1985	1990	Cumulative 1980-1990
By Region				
United States	2.2	3.6	5.4	38.7
Canada	0.2	0.2	0.2	1.6
Latin America	0.2	0.6	0.7	4.7
Europe	2.3	2 3	2.4	25.5
Africa	0.4	0.8	0.8	6.4
Asia	0.7	0.7	0.9	8.9
Australia/New Zealand	1.0	1.2	1.4	13.1
Total	7.0	9.4	11.8	98.9
By Sector				
Private Enterprise	3.8	5.7	7.2	60.2
Government-Related	2.8	2.9	3.2	31.9
Developing Countries	0.4	0.8	1.4	6.8
Total	7.0	9.4	11.8	98.9

SOURCES OF FINANCING

Though we have not attempted to quantify the level of external financing that will be required to support the expansion of the coal industry, some general comments are in order.

First, the expected industry expansion through 1990 will make it difficult to finance mine expansion solely through revenues from existing coal mining operations. Parent companies will have to rely on revenue from other operations or from outside financing. In general, the industry is expected to become more leveraged, using project finance techniques where appropriate to finance major new operations.

In the United States, accounting for two-thirds of the total private enterprise sector's investment needs, historical trends are expected to continue. That is, the share of total production by purely coal mining companies will continue to decline. These companies are mainly small, privately financed organizations. Most coal capacity expansion for use within the United States will be undertaken by subsidiaries of non-coal mining parents, most importantly oil companies, electric utilities, and general mining companies.

The one exception to this trend is mine development for international trade. Since 1973, foreign-based firms have slowly been acquiring reserves or active mining companies in the United States to support export trade. German and British interests have been the most active, with Dutch and French groups the more recent entrants. Most recently, the Japanese have become heavily involved in assessing opportunities in the U.S.

In Australia, the major portion of the expansion in coal operations is expected to be for export, principally to Japan. As a result, the Australian coal industry will continue to be highly international in flavor, with a large number of participants ranging from consumers to multinational oil companies to government groups such as Britain's National Coal Board. Mines are expected to be multi-participant ventures using project finance techniques.

Second, the governments involved will probably meet most of the financing needs of the government-related sector with public funds. The exceptions to this situation may be India and Turkey. Although each has nationalized its coal industry, difficulties in internal capital formation may require international banking community support for investment needs.

Finally, even though the investment requirements of developing nations are small, financing will be difficult. Coal production in many of the developing nations will be primarily for domestic consumption, for which foreign equity funding is difficult. As pointed out in the World Bank's publication, *Coal Development Potential and Prospects in Developing Countries*, "LDCs will look to bilateral and international agencies as well as commercial banks to supplement budgetary allocations." The World Bank estimates that two thirds of LDC funding will have to come from external financing sources.

A number of international groups have already signed or negotiated exploration and development contracts in developing nations: Exxon and others in Colombia; firms from the United States, England, Japan and South Korea in Indonesia; and Anglo-American and Royal Dutch Shell Oil in Botswana and Swaziland. The Japanese government has a program to subsidize general coal development research projects abroad, to finance overseas exploration projects, and to guarantee private loans for coal development in foreign countries. The World Bank notes that "these efforts are directly linked to coal development for exports whereby foreign sponsors provide equity financing or loans secured by long-term sales contracts."

SUMMARY

To sum up, the nineteen eighties are likely to see a reversal of the fortunes of the coal industry in the non-Communist world. After declining for much of the post-World War II period, coal will increase its share of world energy supplies. Meeting the goals implicit in this new role will be expensive by past standards in the coal industry, but not unduly expensive in comparison to the investment needs of the other energy industries. The coal industry's cumulative expenditures during the eighties estimated at $99 billion (1980 U.S. dollars) are less than half the expenditures Chase estimates will be required by the world petroleum industry in the year 1990 alone. If the current financing trend continues, more than half of the coal industry's future capital needs will be met from external sources of funds, with the international banking community playing a major role in meeting those needs.

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FINAL NOTICE

The Coal Situation is published quarterly, and is free of charge. The contents of each issue include a lead article providing The Chase Manhattan Bank assessment of a significant element of the coal energy sector as well as highlights and statistical tables of the world coal market's performance.

With this second issue, we have continued to send *The Coal Situation* to an expanded mailing list. As of the third issue, however, the mailing list will include only those who have sent in the coupon on the back page. IF YOU WOULD LIKE YOUR NAME TO BE PLACED ON THE PERMANENT MAILING LIST FOR *THE COAL SITUATION*, PLEASE FILL OUT THE MAILING SLIP AND SEND IT IN BEFORE DECEMBER 31, 1980. In the future, names can be added to the list by calling (212) 552-5080, or writing to:

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UNITED STATES COAL BALANCES

	APRIL THRU JUNE			YEAR TO DATE		
	1980	1979	CHANGE	1980	1979	CHANGE
	Million Short Tons		–%–	Million Short Tons		–%–
Consumption						
Electric Utilities	127.98	124.52	2.78	272.55	255.09	6.84
Coking Plants	17.70	19.75	–10.38	36.48	39.13	– 6.77
General industry	15.70*	15.81	– 0.70	32.18**	33.69	– 4.48
Retail Deliveries	1.75*	1.57	11.47	4.20**	4.26	– 1.41
Total Domestic Demand	163.12*	161.65	0.91	345.40**	332.18	3.98
Exports	25.06	17.46	43.53	39.19	28.43	37.85
Total Demand	188.18*	179.11	5.06	384.59**	360.61	6.65
Supply						
Domestic Production	220.07	204.12	7.81	423.35	383.50	10.39
Imports	0.37	0.48	–22.92	0.78	1.04	–25.00
Total New Supply	220.44	204.61	7.74	424.13	384.55	10.29
Stock Change	32.26	25.50	–	39.53	23.94	–

Totals may not add due to rounding
*Estimated
**Revised Jan-Mar 1980

Sources: U.S. Department of Energy
National Coal Association
Chase Manhattan Bank

EUROPEAN ECONOMIC COMMUNITY COAL BALANCES – HARD COAL

	APRIL THRU JUNE			YEAR TO DATE		
	1980	1979	CHANGE	1980	1979	CHANGE
	Million Short Tons		–%–	Million Short Tons		–%–
Deliveries to:						
Electric Utilities	48.91*	44.88	8.98	99.40	87.70	13.34
Coke Plants	24.86*	24.40	1.89	48.56	47.86	1.46
General Industry	5.93*	5.96	– 0.50	12.37	12.51	– 1.12
Retail Deliveries	4.63*	5.23	–11.47	10.27	11.21	– 8.39
Total Domestic Demand	84.33*	80.47	4.80	170.60	159.27	7.11
Exports	0.36*	0.50	–28.00	0.75	1.27	–40.94
Total Demand	84.69*	80.98	4.58	171.35	160.56	6.72
Supply						
Domestic Production	66.02	64.15	2.92	139.80	135.24	3.37
Imports – Third Party	21.11	15.81	33.52	39.34	28.48	38.13
Total New Supply	87.13	79.95	8.98	179.15	163.72	9.42
Stock Change	2.44	–1.02	–	7.80	3.17	–

Totals may not add due to rounding
* Estimated

Sources: Eurotstat
Chase Manhattan Bank

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